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broken that it would have been past recognition by any one not thoroughly familiar with the cotton-worm moth, and the other species so apt to be mistaken for it. Yet correct determination is most essential in all such questions and by the ovipositor alone we recognized the specimen as that of the common army-worm (*Leucania unipuncta*). For the benefit of the general reader, and especially of our Southern friends, who are most deeply interested in the question, we give herewith illustrations of both these moths. The ovipositor of the female Aletia is a simple, slightly extensible, cylindrical tube, while that of the Leucania, as shown in Fig. 3, is a compressed, narrow, blade-like, horny process, easily recognizable when all other characters of the species are obliterated. We may say, *en passant*, that on account of the general similarity of color and the frequency with which it occurs in the Southern States during winter time, this Leucania is the most liable to be mistaken for the Aletia.

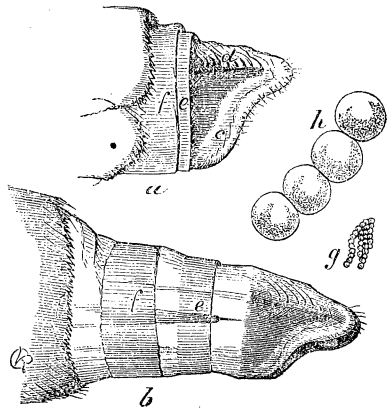


FIG. 3.—Army-worm moth; *a*, end of abdomen denuded and showing ovipositor at rest; *b*, same with ovipositor fully extended; *c*, *f*, retractile sub-joints; *h*, eggs—all enlarged; *g*, eggs, natural size (after Riley).

PYRETHRUM SEED.—I have obtained direct from Europe some seed of *Pyrethrum roseum* for distribution among the agents of the U. S. Entomological Commission, with a view of introducing this valuable plant in various portions of the country where it may be acclimated. I have a small quantity to spare to such of the readers of the NATURALIST as will agree to carefully sow the seed and cultivate the plants and report to me the results of the attempt. I should like to send it especially to those residing in the mountainous or more elevated regions of the South as well as in Colorado and about Lake Superior, and will send to such upon application.—*C. V. Riley*.

ANTHROPOLOGY.¹

ANTHROPOLOGY IN MISSOURI.—The Academy of Science of St. Louis published two important additions to anthropology during the past year: "Contributions to the archæology of Missouri, by the Archæological Section of the St. Louis Academy of Science. Part 1, Pottery, by W. B. Potter and E. Evers. Naturalists' Bureau, Salem, Mass., 1880, 30 pp., 24 lith. pl., 5 maps, 4to;" and

¹ Edited by Prof. OTIS T. MASON, Columbian College, Washington, D. C.

two papers in Vol. iv, No. 1, of Transactions, entitled, "The Geological and Geographical Distribution of the Human Race," by the Hon. Nathaniel Holmes, and "Zoque, the language spoken at Santa Maria de Chemalapa, and at San Miguel and Terra Blanca, in the State of Chiapas, Mexico," by Antonio de Coruna y Coludo, translated by J. A. Dacus.

The memory of pleasant days passed with our friends during the meeting of the American Association in 1878, and of the valuable collections which they have made at great expense, is re-awakened by the appearance of these two volumes. The paper of Judge Holmes is in the nature of a lecture upon the origin and early migrations of our race. Starting out with Mr. Wallace's six zoological provinces; Palæarctic, Oriental, Australian, African, Nearctic, and Neotropical, it is assumed, "that man's distribution over the earth must have pursued an analogous course, under the threefold operation of evolution, migration over continuous areas, and extinction in some areas." The author considers it scientifically demonstrated that man existed in Europe in the Miocene period. After passing in review the Canstadt, Cromagnon and Furfooz races of western Europe, Judge Holmes turns aside to combat Professor Dawkins' theories concerning the post-tertiary origin of man and the identity of the Eskimo with the cave-dwellers of Dordogne.

As to our own country, it is held that the earliest existence of our race, was in the Pliocene of the Pacific coast, and that they progressed to the Atlantic border when the land communication was established across the continent. The subject of bands of color coördinated with other racial characteristics, of the pristine home and the migrations of men, the causes of racial differences, the peopling of America, and of plurality of origins are thoughtfully considered.

The Zoques were once a powerful nation, extending from Tehuantepec through Tabasco and Chiapas into Oaxaca, now numbering from 2500 to 3000. At present they are confined to a small district and two mean villages, Santa Maria de Chemalapa and San Miguel. Their language belongs to the Maya-Quiché, most nearly related to the Tzendal-Maya. Three pages of vocabulary accompany the paper on the Zoques.

The work of Professor Potter and Dr. Evers is destined to become a classic upon the archæology of Southwestern Missouri. We have in their monograph a neat quarto resembling very much in outward appearance the Smithsonian separate Contributions to Knowledge, and containing: 1. A paper on the archæological remains in south-western Missouri, by Professor W. B. Potter, which is a model of brevity and precision (pages 5-19); 2. A paper on the ancient pottery of south-eastern Missouri, by Dr. Edward Evers, which is exceedingly cautious as to its theories (pages 21-30); 3. At the close of the text are five maps to illus-

trate Professor Potter's paper, and twenty-four lithographic plates containing one hundred and forty-nine figures drawn to a scale by Dr. G. Hambach, to illustrate Dr. Evers' paper. Excepting a few faults of proof-reading, the press-work and illustrations are all that could be desired.

One must study this volume with a good map of Missouri before him. The geology of the south-eastern corner of the State is well described, especially the ridges bounded by bayous upon which the remains are located. Two ridges are included within the present survey: the "Sandy Wood Settlement," near the town of Diehlstadt, in Scott county; and the "New Madrid and Sikeston Ridge," in New Madrid county. The latter ridge furnishes four settlements besides several scattering mound sites. The especial characteristics of these village sites are an earth wall and ditch enclosing a given area, an oblong principal mound, around which is an elliptical clear space, innumerable lodge-hollows filling the remainder of the enclosure beyond the clear space, and, finally, here and there, burial mounds, from which hundreds of skeletons and many thousands of specimens have been exhumed.

It is very difficult to abridge Professor Potter's terse description, and we regret the want of space to give even his summary (pages 17-19).

In Dr. Evers' portion of the volume will be found descriptions of the materials, shapes, coloring and decorations of the pottery.

The material is a dark, grayish clay, mixed with sand and shells, and sun-dried. (On the last point, see Professor Putnam's excellent review of this work in the *Sc. Am. Supplement*, Jan 1, 1881, 4161-4163.) The color is generally black, and, in some specimens, moulded in the clay. The decorations are red, white and black, not burned in.

In shape the vessels are classed as long-necked; short-necked; wide-mouthed, shallow dishes, with or without handles; gourd-shaped; animal-shaped; and those exhibiting the human form. A few forms are suggestive of Peruvian, Central American, Pueblo, cliff-dwelling, and even Asiatic pottery; but Dr. Evers as well as Professor Putnam have evidently learned caution through a large experience. The greatest variety in supporting the vessels is exhibited in Dr. Hambach's drawings.

The ornamentations are either moulded in the vessel, luted on the surface, incised, or painted on the outer surface (very rarely on the inside). The author makes an observation with reference to the design of these varied forms of embellishment which strikes us very favorably indeed. It might be called "the law of the least marvelous." He contends that ancient implements must not be referred to any function more important or significant than a corresponding one of the present day.

In conclusion, the NATURALIST extends its congratulations to

the St. Louis Academy of Science upon the prosecution of an investigation so thorough that it will never need to be repeated.

THE STUDY OF INDIAN LANGUAGES.—Major J. W. Powell has just issued a second edition of "Introduction to the Study of Indian Languages, with phrases and sentences to be collected. Washington, 1880." Although purporting to relate to language alone, the work covers the whole ground of anthropological research. Chapter I is a discussion of the alphabet, together with the best method of transliterating an Indian language. Chapter II is headed Hints and Explanations, and is a preparation for the lists of phrases and sentences to be collected in the schedules. These are divided into thirty-two sections, treating of persons, parts of the body, dress and ornaments, dwellings, implements and utensils, food, colors, numerals, measures, divisions of time, standards of value, animals, plants, geographic terms, geographic names, the firmament and meteorologic phenomena, kinship, social organization, government, religion, mortuary customs, medicine, amusements, new words, accident, pronouns and transitive verbs, possession, intransitive verbs and the other parts of speech used as verbs, voice and mood and tense, the best method of studying materials collected, the rank of Indian languages. Chapter III is a collection of schedules containing a great variety of questions in order to bring out the truth with reference to each of the subjects named above.

In the back of the volume is a set of kinship charts which embrace both consanguinity and affinity for nine generations, including that of *ego*, four above *ego*, and four below *ego*. Instead of using the old-fashioned circles for the individuals in the group, found in Mr. Morgan's tables and elsewhere, the triangular characters used by the Indians themselves to denote man and woman are worked up with a series of colors so as to present to the eye at a single view, all the facts desired.

The alphabet presents a few innovations, which are usually very undesirable, but which in this case are on the whole an improvement, since they substitute a plain letter, which may be found in any printing office, for characters and logographs difficult to reproduce.

A PRE-HISTORIC ROCK RETREAT—In January, 1876, the late S. S. Haldeman, Professor of comparative philology at the University of Philadelphia, discovered on his farm near Chickies, Pa., upon the eastern bank of the Susquehanna river, a rock retreat of the prehistoric age, which yielded him, when he explored it with the spade, a large number of stone implements, and proved to be a locality where the occupation of arrow-making had been followed for a long lapse of time. This retreat, located in Lancaster Co., had been made the subject of several printed communications by Professor Haldeman, the last of which was the one read before the American Philosophical

Society of Philadelphia, Pa., June 21, 1878, and printed since in the Transactions, Vol. xv, page 351-368, with fifteen lithographic plates; one of these represents the rock recess with the railroad track running in front of it. The text accompanying the plates contains a statement concerning the probable age of the relics; thirty inches of black mold accumulated by decaying vegetation would seem to indicate to the author a time roughly estimated at two thousand years. The objects found are described under the following headings: Knives, chisels, scrapers, borers, arrow-heads, spear-heads, hoes and diggers, sinkers, hammer-stones, tomahawks of honor, pipes, cores and chips, pebbles, shells, bones, pottery; the latter showing a large number of different patterns. The professor's remark (page 354), that the name "celts" given to the stone chisels, should be restricted to the people who bear this name, is not quite to the point, for this term, in Greek, *κεῖλη*, stands in no connection whatever with the national name of the Celts; but is related to the Latin verb *cælare*, to chisel out, to engrave; and to the substantives: *cælatura*, the art of chiseling and that of making relievos; *cælamen*, a basso or mezzo-relievo; *celum*, the artist's chisel.

ANTIQUITY OF MAN.—In the *Princeton Review* for Nov., Principal Dawson reviews Dawkins on early man in Britain, Barrande's "Brachiopodes," "Les Enchainements du Monde Animal," by Gaudry, and Saporta's "Le Monde des Plantes," in their relation to the antiquity of man and the origin of species. Objecting to Professor Dawkins' classification of the later tertiary, the writer suggests the following: I. Pleistocene, including (*a*) Early Pleistocene and (*b*) Later Pleistocene; II. Modern, or period of man and modern mammals, including (*a*) post-glacial and (*b*) recent. Exception is also taken with good reason to Dawkins' separation of the cave men from the river-drift men, and to his identification of his cave men with the Eskimo. On the next page, however, Dr. Dawson is not so hard to please, when he says that the connection of the Etruscans with the introduction of the bronze age into Central Europe, viewed in relation to their probable ethnic affinities with the neolithic and Iberian races, remarkably welds together the stone and the bronze age in Europe, and explains their intermixture and "overlap" in the earlier lake habitations of Switzerland and elsewhere. The portion of the paper germane to our notes closes with an endeavor to recall the historical deluge as a force in the production of those physical changes which separate the deposits containing the remains of palæocosmic man from those of later date. The paper appears in full in the *Kansas City Review*, for January and February.

THE AZTEC DICTIONARY OF FATHER AOLNZO DE MOLINA is a most important help for the study of the Aztec or Mexican language, and since it gives the ancient, uncorrupted forms of this sonorous tongue from a time dating but little after the conquest, it is high-

ly appreciated by all Mexicologists. The number of Aztec terms contained in each of the two parts, Spanish-Aztec and Aztec-Spanish, cannot fall much short of thirty thousand. The great scarcity of both editions (1565 and 1571) has raised its price rather high, but through Platzmann's recent re-publication of the second edition linguists are now enabled to acquire this "Thesaurus" at a very moderate figure. The new edition reproduces the work in *fac-simile* and bears the following title: "Vocabulario de la Lengua Mexicana, compuesto por el P. Fr. Alonso de Molina, Publicado de nuevo por Julio Platzmann, Leipzig, B. G. Teubner, 1880, Quarto." The volume is dedicated to the memory of the Empress Catharine II., of Russia, the first sovereign who encouraged linguistic researches within the limits of her vast domains in Europe and Northern Asia.

THE INDO-CHINESE AND OCEANIC RACES.—Mr. A. H. Keene, of whose work the *NATURALIST* has frequently made mention, commences in the number of *Nature* for Dec. 30, a series of papers on the Indo-Chinese and Oceanic Races—types and affinities. The following scheme will be followed in the discussion:

A. DARK TYPES.

- I. NEGRITOS: Aetas; Andamanese; Samangs; Kalangs; Karons.
- II. PAPUANS: { Central branch—Papûans proper.
 { Western branch—Sub-Papûans, West (Alfuros).
 { Eastern branch—Sub-Papûans, East (Melanesians).
- III. AUSTRAL: Australians, Tasmanians?

B. CAUCASIAN TYPE (Fair and Brown).

- IV. CONTINENTAL BRANCH: Khmêr or Cambojan Group.
- V. OCEANIC BRANCH: Indonesian and Sawaiori or Eastern Polynesian Groups.

C. MONGOLIAN TYPE (Yellow and Olive Brown).

- VI. CONTINENTAL BRANCH: Indo-Chinese Group.
- VII. OCEANIC BRANCH: Malayan Groups.

THE PAWNEE INDIANS.—Mr. John B. Dunbar, of Deposit, New York, contributes to the November number of the *Magazine of American History* a paper of twenty-four pages upon the Pawnee Indians, describing their trade, food, feasts, hunting, war and medicine. The list of food plants and the discussion of the practice of medicine are especially good. It has been asserted in very high quarters that the Indian of this continent had primarily no knowledge of the medicinal properties of herbs aside from incantation. It might be well for Mr. Dunbar to give this question a little attention. Sooner or later some scholar or group of scholars will publish an encyclopædia of our Indian tribes, and for this work such monographs as the one under consideration are a necessary preparation.

THE WESTERN RESERVE SOCIETY.—From our esteemed correspondent, Col. Charles Whittlesey, we have received a tract entitled "The Universal Indian Problem," and No. 50 of the pam-

phlets of the Western Reserve & No. Ohio Hist. Soc., containing the Indian narrative of Judge Hugh Welch, and Wyandotte missions in 1806 and 1857, both edited by Mr. C. C. Baldwin. The former is a letter to General Garfield on the subject of Indian education, which takes a rather gloomy view of the subject. Of the latter, as well as of all the publications of this society, we take great pleasure in saying that the permanent records of an association can be valuable in the highest degree without being in the least costly or pretentious.

THE CENSUS OF ALASKA.—The *New York Herald* for January 10 and 11, gives a detailed account of the exploration of the Alaskan peninsula for the purpose of enumerating the population, and of studying the habits of the natives. No one better fitted for this service could have been found than Mr. Petroff, who adds to his thorough knowledge of the Russian and English, a practical acquaintance with ethnology, acquired while assisting Mr. Bancroft in the preparation of his great work on the native races of the Pacific States. Mr. Petroff will prepare an elaborate paper on Alaska for the next census and will contribute a memoir to the volumes of the Ethnological Bureau.

THE DAVENPORT ACADEMY, IOWA.—The *Davenport Daily Gazette* for January 6, 1881, contains the record of the annual meeting of this thriving society. The retiring president, Mr. Pratt, devoted the annual address to the discussion of the mound-builders. Mr. J. Duncan Putnam was elected president for the ensuing year, and Dr. C. C. Parry, corresponding secretary. Notice is given that the printing of volume III will be resumed at once.

GEOLOGY AND PALÆONTOLOGY

APPARENT GLACIAL DEPOSITS IN VALLEY DRIFT.—While collecting facts regarding the question whether there was in Maine a re-advance of the glacier subsequent to the deposition of the sedimentary Champlain clays and valley drift, the writer observed certain large boulders lying on or in the valley drift which seemed too large to have been deposited by any of the ordinary forces of valley transportation. Sometimes numbers of boulders were found in pell-mell masses quite morainal in appearance, and I was for a time inclined to regard them as glacial. The smaller stones and boulders might readily be supposed to have been carried down in spring by floating blocks of ice, but the largest of them staggered me, until one day I found a boulder weighing not far from one hundred tons lying on the undisturbed silt of the present flood plain of the Piscataquis river. Its history was as follows: Ever since the first settlement of the country that rock had stood right in mid-channel, a constant object of apprehension and vituperation to the lumbermen, for many were the "jams" of logs which it had caused, some of them of large size. But nothing